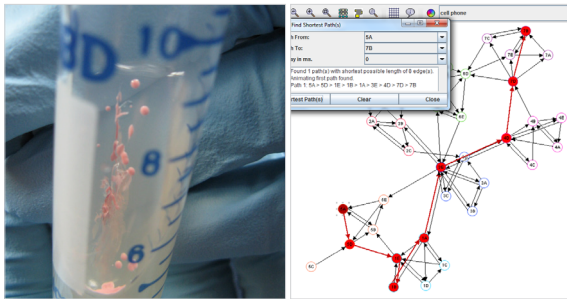


## Why Inquiry-Based Modules?

The content for these modules comes directly from our interdisciplinary systems biology research. This leads to applicable Science, Technology, Engineering, and Math (STEM) themes. Educational research has demonstrated that building new understanding through personal investigation and discovery develops critical-thinking, problem-solving and collaborative skills which are applicable in all types of learning environments. The modules developed in the Baliga Lab are based on such research to facilitate student success. The quality of the modules is evidenced by our “certification of exemplary materials” by Washington State LASER.

**“Engaging, real world, and allows students to be all levels of a scientist...”**

- WA State LASER (Leadership Assistance for Science Education Reform)



## Helpful Links

<http://baliga.systemsbiology.net>  
<http://see.systemsbiology.net>  
<http://www.systemsbiology.org>

## Supporting ISB

Original funding for this program came from the National Science Foundation, the Stuart Foundation and the Amgen Foundation. Funding continues through NSF and NIH. However, despite significant success, federal or state funding is not an option for developing and implementing the modules on a broader scale.

**You can make a difference.** Systems Education Experiences is currently looking for individuals, foundations and corporate sponsors to support internships, teacher training, and the ongoing development of SEE modules as part of school curriculum.

If you would like to support this program please contact Nick Newcombe at (206) 732-1287 or [nick.newcombe@systemsbiology.org](mailto:nick.newcombe@systemsbiology.org).

To learn more about this innovative program, please contact Claudia Ludwig at (206) 732-1453 or [claudia.ludwig@systemsbiology.org](mailto:claudia.ludwig@systemsbiology.org).

Institute for  
**Systems Biology**  
*Revolutionizing Science. Enhancing Life.*

401 Terry Avenue North  
Seattle, WA 98109  
Phone: (206) 732-1200  
Fax: (206) 732-1299

Systems   
Education Experiences

Baliga Lab at Institute for Systems Biology



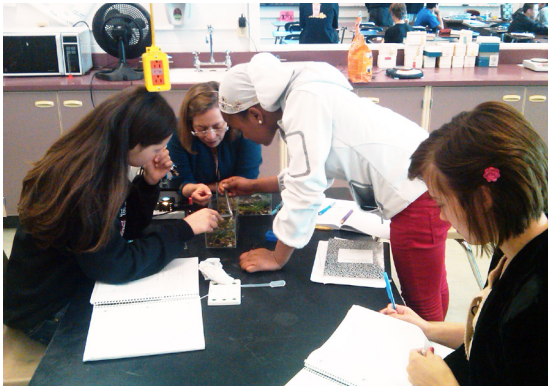
Institute for  
**Systems Biology**  
*Revolutionizing Science. Enhancing Life.*

## Leading Scientific Research Translated for Classrooms

As part of Systems Education Experiences (SEE), the Institute for Systems Biology forms collaborative teams comprised of researchers, educators and students to:

- increase student engagement and retention in the sciences
- support educators as they teach modern and accurate science
- foster the development of bright thinkers and scientists

The result has been the development of inquiry and standards based instructional materials for 6-12th grade science classrooms that utilize new practices in biology to teach science as it exists today.

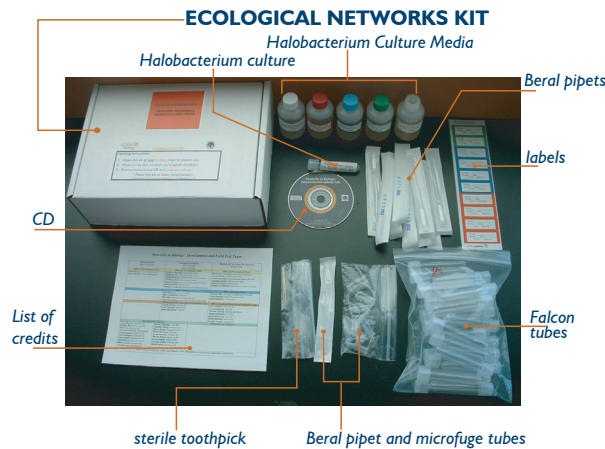


**“Students will be able to have those “ah ha!” moments...”**

*- Teacher comment regarding the Baliga Lab Modules*

## Science Modules that Foster STEM and Systems Thinking

*Ecological Networks* – students are introduced to the concept of representing complex systems as a graph of nodes and edges and apply this understanding to an ecological case study including extreme forms of life.



*Environmental Influence on Gene Networks* – students complete the steps scientists take when investigating how organisms induce phenotypic changes in response to the environment.

*Observing Beyond our Senses: Inquiry Drives Technology* – students in physics, integrated science, and biotechnology courses are confronted with the same challenges scientists and engineers are when the technology they need to answer questions is not available.

*Ocean Acidification: A Systems Approach to a Global Problem* – students use systems thinking while acting as interdisciplinary scientists and delegates to investigate how the changing carbon cycle will affect the oceans along with their integral populations.

We are currently field testing two new modules. One on computational modeling and one on food sustainability. Please contact us for more information.

## Internships

As part of our collaborative efforts, we offer paid internships for high school students and teachers each summer. These offer experiences in research, systems biology, career exploration and in web and curriculum development.



**“I learned how to work collaboratively in a lab setting. It was also great to get a feeling for what it is like to be a research scientist.”**

*- Jessica M.  
Garfield High School  
Seattle WA*

## About Us

These modules are developed at the Institute for Systems Biology through the SEE program in Nitin Baliga's lab. Professor Baliga has made significant contributions to systems level cellular studies and to science education by translating his research into teaching modules.